



waste site cleanup



Audit Update for January, February, and March 2003

Level II Audits for January, February, and March 2003:

DEP completed Level II audits and issued Notices of Audit Findings (NOAFs) at 30 sites between January and March 2003. Six Notice of Noncompliance's (NONs) were issued together with DEP's findings. Level II audits of interest in January, February, and March 2003 include:

1. Following a LII audit of a Phase IV Completion report and Phase V Operation Maintenance & Monitoring (OMM) activities, DEP issued an NOAF/NON for failure to submit timely OMM reports and failure to specify the type, frequency and duration of monitoring, and testing or inspections to ensure and confirm that the remedial action is performing as designed. During an inspection of the site, and a review of documents, DEP determined that since entering Phase V in November 2000, we had only received one OMM report. In addition, the PHIV Completion report stated that groundwater from select wells would be monitored periodically; however, the report did not specifically describe which wells or at what frequency. DEP required submittal of an OMM report and submittal of a revised Phase IV report within 60 days. (Amherst, RTN 1-00786, NON-WE-03-3A011, February 10, 2003)
2. Following a LII audit of a remedial system implemented and operating at a site as a Comprehensive Response Action, DEP issued an NOAF/NON for failure to comply with the PHV Remedy Operation Status (ROS) Operation and Maintenance & Monitoring (OMM) plan. Through an inspection of the site, and review of monitoring reports, DEP determined that at least one monitoring well had not been gauged for up to 5.5 months because a car was parked over the well at the time of inspection. The OMM plan called for gauging all 4 recovery wells and 15 monitoring wells twice a month and bailing wells with greater than 0.2 feet of non-aqueous phase liquid (NAPL). Up to four feet of NAPL has been recorded in the ungauged well. DEP required revisions to the OMM plan to

ensure access to the well during the planned monitoring events.
(Springfield, RTN 1-00173, NON-WE-03-3A015, February 27, 2003)

3. Following a LII audit of a PHV ROS and OMM Status Report, DEP issued an NOAF indicating that there were no violations of the requirements applicable to the remedial system operation at the site. The installed remedial system consists of a dual-phase extraction system to treat soil and groundwater and collect non-aqueous phase liquid (NAPL). The system was in operation during the inspection.
(Worcester, RTN 2-10900, March 10, 2003)

Level III Audits for January, February, and March 2003:

DEP completed Level III audits and issued NOAFs at 33 sites between January and March 2003. Twenty NONs were issued with DEP's findings. Level III audits of interest in January, February, and March 2003 include:

1. Following an audit of a Response Action Outcome (RAO) and Activity & Use Limitation (AUL), DEP issued an Notice of Audit Finding/Notice of Noncompliance in March 2001 requesting an Audit Follow-up Plan for additional response actions. In April 2001, DEP approved, with conditions, the submitted Audit Follow-up Plan and Modified Audit Follow-up Plan. Among the conditions were: installation of overburden, and if needed, bedrock wells at or near downgradient residences to assess groundwater conditions near the homes; collection and analysis of groundwater samples from new and existing wells to characterize the groundwater contaminant plume, groundwater sampling to include, at minimum, volatile organic compounds (VOCs), chlorinated VOCs, polyaromatic hydrocarbons (PAHs) and Volatile Petroleum Hydrocarbons/Extractable Petroleum Hydrocarbons (VPH/EPH) with analytical reporting limits not to exceed Method 1 standards; indoor air sampling (by TO-14) at downgradient residences; characterization and delineation of the source(s), extent and migration pathways of oil and hazardous materials. In July 2002, DEP received an Audit Follow-up Plan Completion Statement with a revised Class A-3 RAO. The Completion Statement indicated that the Follow-up Plan had been "Modified... to eliminate sediment and additional air sampling." Since the modifications were not proposed to DEP, not approved by DEP, and were in direct conflict with approved conditions on the work required by DEP, and because the revised RAO failed to demonstrate a level of No Significant Risk, DEP determined the RAO not to be valid. (Rockland, 4-12831 & 4-14505, NON-SE-01-3A-004, January 17, 2003)

2. A release of gasoline and waste oil from underground storage tanks (USTs) resulted in a release to soil and groundwater at a commercial site. The site is located within a Zone II for municipal water supply wells. Response actions conducted at the site included UST and contaminated soil removal. The site was classified as a Tier II disposal site in August 1997. A Class A-2 RAO Statement was submitted to DEP in August 2000. DEP issued an NOAF/NON

for the site and concluded that the RAO should be retracted and a Tier I permit application should be submitted to conduct additional site investigations. DEP found that the site should have been classified as a Tier I site due to inclusionary criteria, exposure point concentrations were not conservatively calculated, the horizontal extent of contamination was not delineated, a clean and accurate description of the RAO boundary was not provided, and no confirmation of soil disposal (e.g. Bill Of Lading) was provided. (Dudley, 2-0895, NON-CE-03-3062, March 26, 2003)

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waste site cleanup



Audit Update for April, May, and June 2003

Level II Audits for April, May, and June 2003:

DEP completed Level II audits and issued Notices of Audit Findings (NOAFs) at 61 sites between April and June 2003. Fifteen Notice of Noncompliance's (NONs) were issued together with DEP's findings. Level II audits of interest in April, May, and June 2003 include:

1. Following a LII audit of a Phase IV As-Built Construction Report and associated remedial treatment system, DEP issued an NOAF indicating that there were no violations of the requirements applicable to the remedial system operation at the site. The installed remedial system consists of a soil vapor extraction and air-sparge treatment system. The system was in operation during the inspection. Air Treatment off-gas control devices were achieving 95% reductions. (Southborough, RTN 2-00952, April 30, 2003)
2. Following a LII audit of RAM activities being conducted at a site, DEP issued an NOAF and entered into an Administrative Consent Order with Penalty (ACOP) for failure to provide notification of a NAPL condition, and not seeking approval to conduct an Immediate Response Action (IRA). The objective of the initial RAM Plan was to remove petroleum-impacted soil located at the exterior of a school in the vicinity of underground storage tanks that were to be removed. The RAM was proposed because previous subsurface investigations had determined the presence of reportable concentrations of petroleum in soil and groundwater surrounding the tanks. However, the RAM plan also discussed dewatering activities to address non-aqueous phase liquid (NAPL), which was detected on the site. During follow-up RAM assessment, NAPL was again measured in two monitoring wells at a thickness greater than 0.05 feet. DEP's Consent Order included a \$13,500 penalty. (Ashburnham, RTN 2-13710, ACOP-CE-03-3004, May 15, 2003)
3. Following a LII audit of a soil vapor extraction system at a site

currently in Remedy Operation Status (ROS), DEP issued an NOAF/NON for failure to appropriately maintain and modify ROS. Significant modifications to the remedial system were proposed in a Release Abatement Measure (RAM) Plan that was submitted in anticipation of construction/excavation at the site. The RAM Plan included soil excavation and disposal, as well as, reconfiguration of the system components and layout, and an upgrade to oxygen bio-sparging. RAM's are intended to reduce risks and/or increase the cost effectiveness of response actions until comprehensive remedial actions can be implemented. Modification of the ROS should have been evaluated and implemented through amended comprehensive response actions and not a RAM. In addition, DEP had only received one of two mandatory Operation, Maintenance & Monitoring (OMM) Status Reports at the time of the audit, which are required every 6 months. DEP required submittal of a RAM Completion Report and submittal of the status report. (Northampton, RTN 1-11553, NON-WE-03-3A059, June 4, 2003)

Level III Audits for April, May, and June 2003:

DEP completed Level III audits and issued NOAFs at 59 sites between April and June 2003. Forty-four NONs were issued with DEP's findings. Level III audits of interest in April, May, and June 2003 include:

1. A warehouse, office space and a retail graphic arts and drafting supply store occupy a site. The site is located within an Interim Wellhead Protection Area (IWPA) of two inactive municipal supply wells for the town. Until these wells are permanently taken out of service, the groundwater classification for the site includes the GW-1 classification. A Class A-3 RAO Statement and Activity & Use Limitation (AUL) with a Method 3 risk characterization were submitted to DEP in April 2002. The report indicated that the site was not within an IWPA and that the GW-1 designation was not applicable. DEP issued a NOAF/NON, concluding that the RAO submittal was not valid and that additional response actions were required. DEP found that a condition of significant risk had not been achieved since the GW-1 designation is applicable to the site, and the Massachusetts Drinking Water Quality Standards (DWQS) are applicable suitably analogous standards. Several exposure point concentrations (EPCs) for groundwater exceeded the DWQS. (Woburn, RTN 3-3377, NON-NE-03-3A056, April 15, 2003).

2. A release of petroleum to soil and groundwater was identified in 1994 on a property comprised of two lots and formerly utilized as a bulk petroleum distribution facility. The two lots have the same owner. The release identified on the eastern lot No. 2 was assigned RTN 4-10308. In 1999, a release of gasoline occurred in the western lot No. 1 and was assigned RTN 4-14727 and 4-15344. Concentrations of gasoline contaminants in groundwater monitoring wells on Lot # 2 exceed the applicable GW-3 standards. The direction of groundwater flow was noted as varying "considerably from east to west, actually reversing directions between gauging

events" on Lot # 2. In August 2002, a Class A-2 RAO and Downgradient Property Status (DPS) were submitted for Lot No. 2 (RTN 4-10308). The DPS stated that gasoline constituents detected in groundwater at Lot No. 2 were the result of contamination migration from the gasoline release in on Lot No. 1. (RTN 4-14727 & 4-15344). DEP issued a NOAF/NON for the site and concluded that the RAO submittal was not valid, the DPS shall terminate, and that additional response actions are required. DEP found that a level of no significant risk has not been achieved since concentrations of contaminants exceed Method 1 standards and that DPS cannot be asserted by persons who owned or operated the property from which the release originated, or caused such release, and who is potentially liable under M.G.L. c.21E for the disposal site through any direct or indirect contractual, corporate or financial relationship. (New Bedford, RTN 4-10308, NON-SE-03-3A-015, May 27, 2003).

3. DEP conducted an audit of a Class B-2 RAO and issued a NOAF/NON in June 2001. The audit required follow-up to support the LSP Opinion including a determination of the extent of subsurface contamination, additional risk characterization, and a revised RAO. In addition, it was noted that the associated Activity and Use Limitation (AUL) to the RAO had not been recorded and DEP required that an AUL be filed if the original class of RAO is re-filed with the follow-up work. In April 2002, DEP received documentation that an AUL was recorded at the county Registry of Deeds. However a submittal addressing the additional follow-up work was not received. DEP issued a Need To Conduct Further Response Actions/Invalid RAO letter for the site and concluded that the RAO is not valid and that the AUL must be terminated. DEP found that the requested additional follow-up work necessary to support the conclusion of No Significant Risk was not conducted. DEP is also pursuing Higher Level Enforcement with penalty for failure to perform the actions required in the Notice of Noncompliance. (Springfield, 1-12504, NON-WE-01-3A060, April 11, 2003)

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Audit Update for July, August, and September 2003

Level II Audits for July, August, and September 2003:

DEP completed Level II audits and issued Notices of Audit Findings (NOAFs) at 40 sites between July and September 2003. Ten Notices of Noncompliance (NONs) were issued together with DEP's findings. Level II audits of interest in July, August, and September 2003 include:

1. Following a LII audit of the Phase V Operation, Maintenance & Monitoring (OMM) status applicable to the implemented site remedy, DEP issued a Notice of Audit Finding (NOAF)/ Notice of Noncompliance (NON) for failure to complete a Phase IV Remedy Implementation Plan (RIP), failure to provide for appropriate monitoring of remedial additives, and failure to provide timely status reports. DEP required submittal of the RIP, appropriate monitoring, and submittal of required status reports within a specified timeframe. (Springfield, RTN 1-10473, NON-WE-03-3A075, July 1, 2003)
2. Following a LII audit of the Phase V Remedy Operation Status (ROS) applicable to the implemented site remedy including groundwater removal and treatment, air sparging, and soil vapor extraction, DEP issued an NOAF/NON for failure to operate a remedial system as intended. As observed during a June 2003 inspection, the transfer pump and air sparge unit were not operating. According to the March 2003 status report, the system was shut down in July 2002. The status report indicated that an enhanced remediation system would be restarted in March 2003. DEP required system repairs and operation by the end of July 2003. (Barre, RTN 2-10523, NON-CE-03-3127, July 2, 2003)
3. Following a LII audit of the Phase V OMM status for an implemented site remedy including air sparging and soil vapor extraction, DEP issued an NOAF/NON for failure to complete and document the final inspection of the remedial system, failure to provide timely inspection and monitoring results, and failure to

acknowledge or document corrective measures taken as necessary to address three separate exceedances of the 95 percent removal requirement for off-gas treatment of point-source remedial air emissions. DEP required applicable Phase V reports addressing the violations. (Chicopee, RTN 1-10355, NON-WE-03-3A110, September 25, 2003)

Level III Audits for July, August, and September 2003:

DEP completed Level III audits and issued NOAFs at 26 sites between April and June 2003. Sixteen NONs were issued with DEP's findings. Level III audits of interest in July, August, and September 2003 include:

1. A release of oil and hazardous materials (OHM) to soil and groundwater was reported to DEP in 1986 at a 15-acre industrial property located in an urban area of mixed industrial, commercial, and residential use. The property has been used as a metal valve manufacturing facility and foundry since the 1880s. Operations at the property ceased in 1986. Nineteen underground storage tanks were removed in 1987. Light non-aqueous phase liquid (LNAPL) was observed on groundwater in the vicinity of several of the excavated USTs. DEP classified the site as a Priority Disposal Site and required a Short Term Measure (STM) to address the LNAPL condition in August 1989. A Phase II Comprehensive Site Assessment, was submitted in January 1991. A Waiver of Department approvals was granted in March 1994. Interim Measures for the removal of over 2,000 cubic yards of oil-contaminated soil were conducted between 1996 and 1998. In May 1998, a Phase II Addendum Report and Remedial Response Action Completion Statement, including a Method 3 Risk Characterization, were received by DEP. DEP conducted an audit and issued a NOAF/NON for the site and concluded that the site was not investigated in a manner to establish the horizontal and vertical extent and concentrations of OHM in all media, and all existing or potential migration pathways. DEP found that an adequate characterization for metals impacts was not performed given the fact that the primary use of the property was for metal valve manufacturing. In addition, DEP found that groundwater sampling was not conducted downgradient of areas where petroleum hydrocarbon concentrations in groundwater were high enough to be a potential source of contamination to indoor air. DEP required additional metal characterization of soil and additional downgradient groundwater sampling for petroleum, and/or technical justification for not conducting the additional assessment activities. (Springfield, RTN 1-00170, NON-WE-03-3A070, July 1, 2003).

2. A release of lead, chromium, polychlorinated biphenyls (PCBs) and polynuclear aromatic hydrocarbons (PAHs) attributed to historical disposal of paints and other unidentified sources were identified at a residential site. In February 2001, DEP was notified of the discovery of lead at a concentration of 51,500 parts per million (ppm) in soil at a depth of 0 to 6 inches. DEP required an Imminent

Hazard Evaluation (IHE) for the elevated lead in soils condition. In May 2001, DEP received an IHE that stated "an IHE is not required because there is not currently a complete exposure pathway. First, it should be noted that there are no children residing at the house at the site. Secondly, the highest reported lead level was found not in an area of exposed soil, but rather in a soil sample collected under a pile of brush." Response actions conducted at the site included soil boring advancement, driven groundwater monitoring points, soil excavation (which addressed the elevated lead condition), and analysis of soil, groundwater and indoor air samples. A Class A-2 RAO was submitted to DEP in February 2002. In July 2003, DEP conducted an audit and issued a NOAF/NON that identified a failure to notify DEP of 120-day release conditions, failure to meet the purpose and scope of an IHE, and failure to meet several performance standards for an RAO. DEP found that, although DEP was notified of the presence of lead in soils, DEP was not notified of the presence of chromium, PAHs, and PCBs at levels also requiring notification. DEP found that the IHE should have presumed the presence of children since the site is residential, should have considered the soil to be accessible (a brush pile does not meet the criteria for determining the soil to be inaccessible), and should have conducted an appropriate risk characterization. In addition, several RAO performance standards were not met including a failure to identify the source for PCB contamination, failure to clearly identify how EPCs were calculated, and failure to meet applicable Method 1 cleanup standards. DEP required submittal of a revised RAO Statement that complies with the MCP, or retraction of the RAO. (Holden, 2-13693, NON-CE-03-3113, July 14, 2003)

3. A release of benzo(a)pyrene and C9-C10 aromatic compounds in soil were reported to DEP in August 2001. The source of release was reportedly not known. A sales office currently occupies the site. A former gasoline sales and service station located upgradient of the site, which closed following a fire in the 1960s, was noted as the most likely source. A Phase I Report, Class B-2 RAO Statement and Activity & Use Limitation (AUL) with a Method 1 risk characterization were submitted to DEP in June 2002. DEP issued a NOAF/NON, concluding that the RAO submittal was not supported and that additional response actions were required. Since the source of release was not identified and the highest levels of contamination were found adjacent to the property line/RAO boundary, DEP found that assessments and evaluations of sufficient scope, detail, and level of effort to support the RAO were not performed. DEP required submittal of a revised RAO or Downgradient Property Status (DPS), or a retraction of the RAO and Termination of the AUL. (Monterey, RTN 1-14057, NON-WE-03-3A093, September 9, 2003).

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Helpful Hint

While detailed Standard Operating Procedures (SOPs) for field activities may, in some cases, be an appropriate attachment to a work plan or Phase II Scope of Work (SOW), it is not necessary to attach these SOPs to subsequent submittals describing the work that was performed. If the SOP was modified during the course of the investigations, the modified SOP may be attached; otherwise, reference to the previous submittal may be sufficient.

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waste site cleanup



Audit Update for October, November, and December 2003

Level II Audits for October, November, and December 2003:

DEP completed Level II audits and issued Notices of Audit Findings (NOAFs) at 67 sites between October and December 2003. Thirteen Notices of Noncompliance (NONs) were issued, together with DEP's findings. Level II audits of interest in October, November, and December 2003 include:

1. Following a LII audit of a dual-phase extraction treatment system coupled with a remedial additive treatment system for contaminated groundwater, DEP issued a Notice of Audit Finding (NOAF) with an Interim Deadline for failure to protect the treatment system shed from damage by vehicles, and failure to post contact information on the shed in an accessible and readily visible location as required. DEP required protection of the treatment system and the posting of a name and telephone number of a person to contact within 24 days. (Newton, RTN 3-2580, October 7, 2003)
2. Following a LII audit of a total fluids recovery treatment system for contaminated groundwater, DEP issued an NOAF with an Interim Deadline for failure to maintain a process and instrumentation diagram of the treatment system and failure either to treat point-source atmospheric emissions or provide justification for untreated emissions. DEP required a written response indicating steps to be taken to correct the violations within 30 days (Wellesley, RTN 3-4437, October 8, 2003)

Level III Audits for October, November, and December 2003:

DEP completed Level III audits and issued NOAFs at 36 sites between October and December 2003. Twenty-one NONs were issued with DEP's findings. Level III audits of interest in October, November, and December 2003 include:

1. In September 2000, DEP received a Class A-2 RAO for a release of gasoline at a gasoline sales facility. In July 2002, DEP completed

an audit and issued a NOAF/NON requiring follow-up work, including additional groundwater sampling and submittal of an RAO addendum to support the LSP Opinion of No Significant Risk, or RAO retraction and tier classification if a condition of No Significant Risk was not demonstrated. A Notice of Delay for submittal of a Post-Audit Completion Statement and compliance with the follow-up work requested in the July 2002 NOAF/NON was received by DEP in December 2002 and July 2003. The Notices were submitted to allow for the collection of additional groundwater samples to establish a conservative exposure point concentration (EPC) at one monitoring well location in support of the RAO. In October 2003, DEP received a Release Notification Form (RNF) indicating the presence of methyl tert-butyl ether (MTBE) and C9-C10 Aromatics in groundwater exceeding the applicable GW-2 Reportable Concentrations (RC). The concentrations also greatly exceeded the applicable GW-2 and GW-3 Method 1 risk characterization standards. According to the RNF, knowledge of the condition was obtained in June 2003. DEP conducted a follow-up audit and issued a Need To Conduct Further Response Actions letter, which found the September 2000 RAO was not valid since the results of additional groundwater sampling did not support the RAO. DEP required further assessment and/or remediation in compliance with the MCP. In addition, the Release Tracking Number (RTN) generated for the October 2003 notification was rescinded and work is continuing under the original RTN. (Maynard, RTN 2-11870, NON-CE-02-3045, November 4, 2003).

2. Upon removal of a 2,000-gallon gasoline UST at a gasoline sales and service facility, a release of petroleum to soil was identified and reported to DEP in June 1997. An IRA was conducted and the site was classified as Tier II in 1998. A Class A-3 RAO Statement and Activity & Use Limitation (AUL) with a Method 1 & 2 risk characterization were submitted to DEP in June 2002. DEP issued a NOAF/NON, concluding that the RAO submittal was not valid, and that additional response actions were required. Specifically, groundwater data provided in the RAO did not demonstrate that the source of release had been adequately controlled and/or eliminated, or that the extent of contamination had been adequately defined. DEP found that two rounds of groundwater monitoring data, collected within four weeks of one another, were used in the risk characterization. The groundwater data does not provide sufficient information relative to seasonal fluctuations of the water table and contaminant concentrations in order to support an RAO. The data also showed increasing levels of gasoline contamination at several monitoring wells. Dramatic increases were noted at the two most downgradient well points. Exposure Point Concentrations (EPCs) were developed by averaging the two sampling rounds. Despite this approach, several contaminant EPCs exceeded their respective Method 1 GW-2 and GW-3 standards. Site-specific Method 2 standards were subsequently developed using results of a soil gas survey. DEP concluded that the EPCs were not conservative since the higher concentrations measured during the second round of

monitoring were effectively averaged down, and that the increasing contaminant trend and limited groundwater data did not support the elimination or control of the source or that the extent of contamination had been defined. DEP required submittal of a Tier II Extension, termination of the AUL, and additional site investigation. (Randolph, RTN 3-15188, NON-NE-03-3A108, November 6, 2003).

3. A release of gasoline, attributed to an abandoned 2,500-gallon underground storage tank (UST), was identified at a municipally owned property in October 1998 during installation of an electrical conduit. The site is located within a delineated Zone II. Elevated headspace screening prompted release notification to DEP, which authorized an Immediate Response Action (IRA). Approximately 50 cubic yards of contaminated soil were excavated and disposed. Four groundwater monitoring wells were installed around the excavation. DEP received an IRA Completion report, Phase I Investigation Report, and Tier II Classification in June 2000 in response to a DEP issued NON. A conceptual Phase II Scope of Work was not submitted; however, the Phase I did recommend the need for additional groundwater monitoring. In May 2003, DEP received a Phase II Comprehensive Site Assessment with a Method 1 risk characterization and a Class A-1 RAO. In December 2003, DEP conducted an audit and issued a NOAF/NON concluding that the RAO submittal was not valid, and that additional response actions were required. DEP found that a level of no significant risk had not been achieved since GW-1 and GW-2 method 1 standards were exceeded for volatile petroleum hydrocarbons; that performance standards for RAOs had not been met, including failure to categorize the site as GW-1, failure to determine the adequate extent of soil and groundwater contamination, failure to develop conservative EPCs, and failure to provide data to support an assertion that background conditions were achieved through response actions conducted; and that the site was not reclassified during response actions to account for the Zone II delineation change that was approved by DEP in October 2001. DEP required a written response to its Notice, a scope of work detailing additional response actions to address violations identified, and a Tier I Classification and Permit package. (Whitman, 4-14291, NON-SE-03-3A044, December 15, 2003)

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Urban Non-responder Enforcement Initiative

In February, DEP initiated enforcement actions against urban nonresponders by issuing Notices of Response Action (NORAs) to Potentially Responsible Parties (PRPs) regarding eleven contaminated sites across the state. The Notices stated that unless the PRPs moved on long overdue actions to cleanup these sites, DEP would step in with its own contractors to perform work and recover three times the cost incurred. If DEP performed work, cost recovery actions would result in the imposition of liens on all properties in the Commonwealth

owned by such parties. DEP will continue issuing such notices to PRPs, in addition to traditional enforcement, in an effort to complete timely cleanups at sites.

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waste site cleanup



The Agency Speaks

by Maria Pinaud, 617/292-5909, Maria.Pinaud@state.ma.us

This column focuses on noteworthy enforcement actions taken by DEP's Bureau of Waste Site Cleanup during July 2003. The statements of fact below are DEP allegations and have not necessarily been admitted to by the parties subject to enforcement. Additional information about enforcement actions is available on DEP's web page: Mass.Gov/dep/enf/current.htm.

Enforcement from Audits

- DEP entered into a Settlement Agreement and Administrative Consent Order (ACO) with the developer of a residential complex situated on land that was formerly used as a rod and gun club to resolve violations of c.21E and the Massachusetts Contingency Plan (MCP) and an appeal of annual compliance fees. The release involves lead contamination in soils at several residential lots. DEP's review of various submittals, and inspections of the site, revealed violations of c.21E, including conducting an Immediate Response Action (IRA) without approval; failure to notify of a potential Imminent Hazard; failure to properly manage remediation waste; failure to employ an LSP during performance of an IRA; and failure to implement health and safety measures to control dust. In addition, Annual Compliance Fees were due for the years 1997 through 2001. Pursuant to the ACO the developer agreed to pay the outstanding fees; complete restoration and landscaping on the lots of homeowners in the development; and complete various activities to return to compliance. DEP agreed to suspend a penalty of \$39,250 contingent on the developer's compliance with the terms of the agreement.
- Following an audit of a class B-2 RAO, an agreement was executed with the Potentially Responsible Party (PRP) of a commercial property for several violations of c.21E and the MCP including failure to meet the performance standards of the RAO, failure to properly manage remedial waste, and failure to comply with provisions stated in the AUL: no Health and Safety Plan, improper soil management, not complying with an

excavation plan, and not maintaining pavement. The PRP agreed to pay a penalty of \$17,500 and perform additional response actions to return to compliance.

Demand for Suspended Penalties

- DEP issued a demand letter to the owner of a former car dealership for payment of a \$7,000 suspended penalty for failure to complete assessment and remediation activities required under c.21E and the MCP at the site. The PRP agreed to clean up oil releases at the property in an Administrative Consent Order executed in January 2001, but failed to meet the deadlines set in the Consent Order.

Demand for Stipulated Penalties

DEP issued a Stipulated Penalty Demand Letter for \$968,000 to a major gasoline retailer for failure to comply with requirements specified in an Administrative Consent Order with Penalty (ACOP) executed in August 2001. The original settlement agreement was intended to resolve violations of c.21E and the MCP for failure to complete comprehensive response actions and develop a remedial plan. The ACOP included a separate penalty of \$10,000 and required that the Company achieve Remedy Operation Status (ROS) by February 28, 2002. During a routine remedial system audit inspection conducted on February 26, 2003, DEP determined that the treatment system installed to achieve ROS had experienced several operational and monitoring problems and had not operated as designed. Upon further review, it was determined that the system was not in operation prior to the filing of the Phase IV Final Inspection Report and Phase IV Completion Statement, which is required prior to the filing of an ROS submittal. Therefore, since the treatment system was not in operation prior to the submittal of the Phase IV Completion Statement and has not operated as designed to date, DEP determined that the performance standards were not met and therefore ROS was not achieved by the deadline specified in the consent order. The Demand Letter also required proper installation, operation and maintenance of the remedial system as designed to protect a sensitive groundwater resource and the submittal of a Phase IV Final Completion Statement.

DEP offers Technical Advice based on Operational Experiences

Air Sparging for 21E Cleanups By Steve Johnson

Air sparging is a technology that has been employed to remediate many disposal sites across the US contaminated with solvents or petroleum products. This technology is most often combined with soil vapor extraction systems to collect the volatile gases released by the sparging process.

MADEP is aware of some cases where the soil vapor extraction system did not effectively capture soil gases liberated by the sparging process, and vapors were pushed toward, beneath, and/or into occupied structures. In one case, gasoline fumes were detected in a building next to a gasoline station where sparging was

implemented. As soon as gasoline vapors were detected, the sparging system was shut off, and the gasoline vapors ceased entering the building. In another case, sparging was performed beneath a low-permeability soil lens, resulting in volatile compounds being pushed laterally, away from the capture zone of the soil vapor extraction system. The pressure applied during sparging pushed VOCs away from the source area, toward and under residential buildings.

In both of these cases, the design of the air sparging/soil vapor extraction system was deficient, and resulted in exposures, or the threat of exposures, to occupants of buildings who would not otherwise have been affected. MADEP is raising awareness of this issue because air sparging is a remedial measure that can actually increase exposure, risk, and liability at a disposal site if not designed, operated, and monitored properly. At a minimum, the following "rules of thumb" should be followed:

- Soil vapor extraction (SVE) should almost always be implemented in conjunction with air sparging. The decision to not use SVE in conjunction with air sparging must be fully justified by the LSP.
- Air sparging should **not** be used where there is LNAPL.
- Air sparging should not be used where geological impediments exist. The geology at a site must allow for upward vertical migration of mobilized VOCs so that SVE wells can capture the VOCs. Sparging should not be done beneath low-permeability soils where horizontal migration of VOCs may occur.
- Some states specify that SVE wells should "ring" the sparge wells, such that the sparging points are surrounded by a ring of soil vapor extraction points. MADEP supports this kind of alignment of sparging/extraction points.
- The capture zone of the extraction points must cover the area influenced by sparging. Some states specify that the air flow rate of the vapor recovery system must exceed the air flow rate of the sparging system; Florida specifies that the SVE system flow rate must be 50% greater than the sparging system flow rate, while some other states recommend 2-5 times higher vapor extraction rates than sparging rates. While MADEP does not specify a particular ratio of sparging to extraction rates, we do endorse the concept of withdrawing more than what is injected. The actual ratio of sparging to extraction rates at a given site should be determined by site-specific factors. The presence of occupied structures close by would be a primary factor to consider.
- Proper monitoring of flow, vacuum, pressure, and soil vapor

contaminant concentrations must be conducted to ensure the operation is proceeding as designed.

- Any monitoring data that are unexplained or anomalous should result in immediate corrective action, or shut-down of the sparging system.

In light of the examples of deficient system design that MADEP has seen, we intend to pay particular attention to the operation and monitoring of these systems to ensure that risk to human health is not exacerbated by this remedial technology.

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waste site cleanup



The Agency Speaks

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This column focuses on noteworthy enforcement actions taken by DEP's Bureau of Waste Site Cleanup during October through December 2003. The statements of fact below are DEP allegations and have not necessarily been admitted to by the parties subject to enforcement. Additional information about enforcement actions is available on DEP's web page:

Mass.Gov/dep/enf/current.htm.

Enforcement from Audits

- As a result of a DEP audit inspection, an agreement was executed with a major gasoline retailer for failing to obtain approval prior to shutting down an oil recovery system, failing to properly label drums of recovered oil, and failing to dispose of drummed contaminated soil within regulatory deadlines. An \$8,125 penalty was assessed. A portion of the penalty was suspended pending compliance with an expedited cleanup schedule. ACOP-CE-03-3005
- As a result of a DEP audit, an agreement was executed with the same major gasoline retailer for failing to comply with a Notice of Activity and Use Limitation (AUL), failing to adequately characterize risk at the site and failing to conduct a diligent assessment. A penalty of \$14,000 was assessed. ACOP-CE-03-3007
- As a result of a DEP audit, an agreement was executed with a realty trust to conduct additional response actions in support of a previous opinion of no significant risk and to pay a \$7,000 penalty to DEP. After the audit, DEP determined the site closure submittal to be in noncompliance with requirements and therefore not valid. In response to DEP's enforcement action, the PRP has since submitted a revised RAO submittal, based on work that had been performed after DEP's audit. ACOP-WE-03-3A014.
- As a result of a DEP audit, an agreement was executed with the owners

of two separate commercial properties regarding violations of an AUL. The violations in both cases were associated with construction activities occurring at each site that failed to comply with the terms and conditions of the AUL. Penalties of \$12,000 and \$ 12,500 were assessed. ACOP-NE-03-3A005 and ACOP-NE-03-3A007.

Late Notification

- DEP executed an agreement with a major solid waste transportation and disposal company for failing to notify DEP within 2 hours of a release of 30 gallons of hydraulic fluid. The PRP also failed to promptly complete cleanup of the release. As a result of overnight rain, the hydraulic fluid was washed into storm drains along the roadway. The company agreed to take appropriate action to clean the spill and to pay a \$12,000 penalty. Additionally, the Company has agreed to revise its emergency response plans and will re-train all employees on responding to emergencies. ACOP-WE-03-3015.

Deadline Enforcement

- DEP issued a unilateral penalty and an order to the owner of a commercial property to perform required response actions for failure to meet the one-year Tier Classification deadline at the site. A \$7,000 penalty was assessed. SPAN-SE-03-3T006 and UAO-SE-03-3T006.
- DEP executed an agreement with the owner of an asphalt plant for failure to perform comprehensive response actions at a former Waiver site. A \$ 6,000 penalty was assessed. A portion of the penalty was suspended pending compliance with a strict cleanup schedule. ACOP-SE-03-3T-003.

Demand for Payment of Stipulated Penalties

- DEP issued a Demand for Payment of Stipulated Penalties in the amount of \$26,250 to the owner of a site for failure to comply with a previous agreement and complete assessment and remediation activities required under the MCP. ACOP-WE-01-3015-STP.
- DEP issued a Demand for Payment of Stipulated Penalties to the owner of a ski resort for failure to comply with a previous agreement and complete assessment and remediation activities required under the MCP. The PRP has since agreed to a strict schedule to clean up several oil releases and to pay a \$ 6,000 penalty. ACOP-WE-03-3020.

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